Prevention

"Whether it's on the farm or in a residential neighborhood, each one of us can contribute to a more sustainable environment. Nature-friendly pest management benefits everyone."

MARY-ANN WARMERDAM
DPR DIRECTOR

BRING HOME THE GREEN

"Bring Home the Green" is the theme of a DPR initiative focused on encouraging urban residents to use integrated pest management (IPM). IPM stresses natural, preventive, and least-toxic solutions to weed, insect, rodent and other pest problems.

Few people would intentionally dump pesticides into creeks and streams. But urban pesticide runoff – which can happen when it rains or when people over-water their lawns and gardens – has polluted many urban waterways. Accidental contact with pesticides can also harm children and pets.

To advance the concept of IPM as a common-sense alternative to conventional pesticide-based pest control, DPR helped fund a project by the University of California Statewide IPM Program and the UC Cooperative Extension in San Diego to deploy computer kiosks in eight urban areas. A Master Gardener staffs each kiosk, which can be located in retail stores, at fairs and other public events. Interactive touch screens let consumers ask questions and print out information. Scripts for the kiosks were written by UC IPM experts with the goal of increasing awareness of how inappropriate pesticide use can lead to water pollution.

Under a federal grant, DPR is also working with UC's IPM program to develop two online training courses for employees of retailers that sell pesticides. Employees can print out information and ask for additional material. They are also quizzed on how much they have learned. The courses focus on IPM, proper pest identification, how to select the right pesticide for the problem, and pesticide safety.

ADVANCING SCHOOL IPM

DPR's School IPM program continues to rack up accomplishments. Since it was launched in 2001 with the passage of the Healthy Schools Act, DPR has conducted 19 training sessions from San Diego to Eureka. DPR will have another four sessions in 2007. The emphasis will continue to be hands-on training in structural and landscape IPM for school district IPM coordinators. More than 600 school staff have been trained. The 569 school districts they come from (out of California's 991 districts) include about 8,000 schools.

DPR's third survey of the state's schools showed a significant increase in adoption of IPM policies and practices. Two-thirds of districts now comply with all four main requirements of the Healthy Schools Act. In 2004, 59 percent of districts had a written policy

We work with growers and urban pest managers to make alternative, least-toxic systems accessible to everyone.

NAN GORDER

Nan Gorder

Pest Management and Licensing Branch

As supervisor in the Pest Management Analysis and Planning Program, Nan Gorder (with DPR since 1990) leads a team of scientists that support growers and urban pest managers as they seek creative solutions to complex biological and regulatory problems. The sometimes competing demands of air quality, water quality and human health can often be addressed first through practices that prevent pests from getting established. Answers can be found by listening carefully and supporting those whose livelihood depends on the crops they grow, as well as by applying scientific findings and the most advanced technologies.

requiring use of least-toxic methods of pest control, compared with 44 percent two years before. Fifty-five percent of schools kept records of pest sightings (an important part of an IPM program), up from 17 percent in 2002.

Schools showed marked improvements in ant management. When DPR did its first survey in 2001, the most often used approaches to ant management were ant baits (37 percent of districts) and insecticidal sprays (32 percent). In 2004, the most common methods of ant management were sanitation (80 percent) and ant baits (69 percent), two practices consistent with IPM. Between 2001 and 2004, use of insecticidal sprays to control insects dropped dramatically, while use of baits, soapy water sprays, caulking and improved sanitation increased each year of the survey, signaling a measurable shift toward use of IPM.

DPR's fourth survey went out to about 1,000 public school district IPM coordinators in April 2007. We are tracking changes in IPM policies and practices, specifically ant and weed management. Results (expected in 2008) will help us identify resources schools may need to make it easier for them to use IPM to manage pests.

School IPM outreach also included:

- Developing a wall calendar that highlights preventive practices, pest monitoring and other IPM activities suitable for each month. DPR sent one to all California school districts to help them record their IPM activities.
- Producing a poster that reminds teachers not to use pesticides in classrooms and lists ways to prevent pests. DPR sent copies to school IPM coordinators statewide.
- Adding a handout on mice and rats to DPR's Pest Information Series, which already included handouts on ant and cockroach pest management.

Rewarding Innovators

Since its inception in 1994, DPR has presented more than 100 IPM Innovator awards. IPM – integrated pest management – promotes natural pest solutions to build a healthier environment that sustains itself with less chemical intervention. Recipients represent a range of business and community interests, including farms and other businesses, community groups, schools, and advocacy organizations. They have forged new ground in IPM and all have actively and unselfishly shared their successful ideas with others.

WINNERS IN 2005 AND 2006 WERE:

- University of California Cooperative Extension Small Farm Program, Fresno County.
- Ecology Action of Santa Cruz.
- Lahontan Golf Club, Truckee.
- Lodi Rules for Sustainable Winegrowing of San Joaquin County.
- Natural Resources Conservation Service in Butte, Glenn, Sutter, and Yuba counties.
- The Pear Doctor, Inc., Lake County.
- Ty Parkinson, Bill Chandler and members of the Stone Fruit Pest Management Alliance, Fresno County.
- Agricultural Advisors, Sutter County.
- California Rice Commission, Sacramento.
- Hudson Vineyards, Napa.
- Integrated Prune Farming Practices, Butte County.
- Mesa Vineyard Management, San Luis Obispo County.
- Napa Valley Grapegrowers, Napa.
- Santa Clara County Government.
- The Nature Conservancy, Butte County.
- Vetsch Farms, Kern County.

- Collaborating with UC's IPM program to produce four interactive DVDs for school district training workshops. Three DVDs target district IPM coordinators and discuss IPM approaches for ants, weeds, and cockroaches. The fourth explains to school administrators the importance, cost-effectiveness, and long-term benefits of a school IPM program.
- Creating an online list of pesticides banned in schools with the 2005 passage of Assembly Bill 405. The law banned school use of canceled or suspended pesticides and those given conditional or interim registration by DPR. DPR updates the list quarterly.
- Developing an online summary of 2006 legislation extending the posting, notification and use reporting requirements of the Healthy Schools Act to private child day care facilities, and making IPM the preferred pest management strategy. We posted online samples of the annual notice and registry forms, and a template of signs. We also produced 14,000 handouts in English and Spanish to distribute to child day care operators.

TRAINING FOR PREVENTION

Making sure that people and businesses that apply pesticides professionally are well-trained and know how to use pesticides responsibly is one of DPR's core missions, a key to preventing pesticide problems.

DPR is charged with licensing and certifying individuals and businesses that apply, sell, or recommend pesticides in California. DPR works cooperatively with the University of California and with stakeholders in developing study guides and examination materials.

To keep that program current, our licensing unit:

- Updated the laws and regulations exam. All license applicants must take this exam. With the many rule changes in the last decade, updating the exam was critical. We are now working with UC to revise the accompanying study guide.
- Revised the private applicator certificate study guide and exams. This study guide replaced one that was more than 10 years old. Developed for DPR by UC, it is now available in English and Spanish. After the certification examination was revised, we also developed a new exam to recertify private applicators that choose to take a test rather than renew their certification through continuing education.
- Developed a new aerial applicator exam. Although the number of aerial applicators ('crop dusters') is decreasing, their responsibilities have increased in a state where urban areas are ever closer to farmland. The exam and study guide for these licensees was more than 20 years old and did not reflect many changes in law and technology. A panel of experts was assembled and asked to pool their expertise to develop an exam and study guide for DPR that reflected the knowledge and expectations required of aerial applicators. U.S. EPA is now looking at using the California study guide as a national model.
- Put in place regulations that require government employees who make recommendations for pesticide use on turf and similar outdoor areas be licensed with DPR as pest control advisers. Licensing ensures that these employees have professional education in pesticide use, important when they are recommending what pest management methods to use on public lands, such as parks, cemeteries, roadsides, and golf courses.

Our licensing program is also developing a new study guide, exam and license category for maintenance gardeners, who typically mow lawns, do general yard cleanup, and take care of ornamental plants and turf. They apply pesticides only occasionally. Maintenance gardeners typically do not have (or need) the knowledge of pesticides required for DPR's landscape maintenance license, which is intended for people whose primary business is pest management, not gardening.

However, the law requires that anyone applying pesticides for hire – even incidentally –must be licensed. Ensuring pesticide applicators are trained and licensed is critical to safe use. DPR is working with UC on a new study guide and exam that reflects the lesser knowledge requirements for occasional pesticide use. Once the exam and study guide are ready – in the next year or two – we will set up a new license subcategory for maintenance gardeners.

URBAN PEST MANAGEMENT WORKING GROUP

In early 2007, DPR formed a group to address pesticide problems associated with pesticide use in the State's rapidly expanding urban areas, including pesticide runoff into creeks and streams. The Department's Pest Management Advisory Committee recommended forming this special study group to focus on urban pesticide use. It includes leaders in urban pest management, water quality experts, and representatives from government, academia, industry and environmental groups. They are working on creative recommendations on how DPR can leverage its resources to solve urban pesticide use problems.

We deal with real-world scenarios and help farmers and urban pest managers make good decisions on what to spray, and when and where, so species are not harmed.

POLO MORENO

Polo Moreno

Pest Management and Licensing Branch

A marine biologist by education and training, Polo's 18 years with DPR have all been with our Endangered Species Project, which he now helps manage. DPR's program to protect endangered species tailors pesticide use controls for the state's unique microhabitats, cropping patterns and land use, based on accurate habitat maps. California is second only to Hawaii in number of endangered species. Polo works with farmers, pest control advisers, wildlife experts, and others to develop measures to protect endangered species from pesticides, putting into place use limits that allow needed pest control while providing protection to endangered species.

We are also creating a license subcategory for people applying fumigants (like metam sodium and methyl bromide) on agricultural land. New regulations expected to be in place by the end of 2007 will require that fumigants be applied only by licensed pest control businesses employing a qualified person with specific training in field fumigation. UC is working on an examination and study guide for this new license subcategory.

INNOVATION IN AG

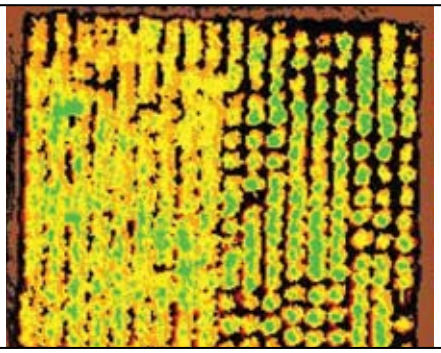
Thirty-one San Joaquin Valley fruit growers and their pest control advisers are working with the California Tree Fruit Agreement, U.S. EPA, DPR and UC's Kearney Agricultural Center to test and promote new reduced-risk methods and technology in the age-old war against crop-destroying pests.

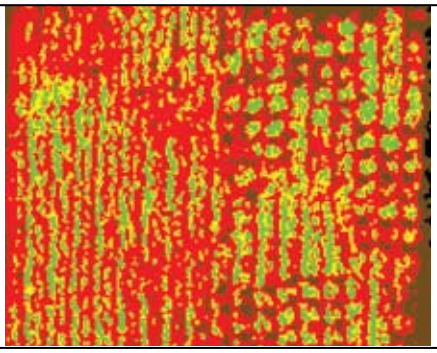
U.S. EPA funds this four-year project. Its goal is to reduce by 20 percent the use of five pesticides by peach and nectarine growers. The five pesticides are broad-spectrum insecticides that kill both good and bad bugs. Some of these compounds have been found in rivers and streams at levels toxic to water organisms. DPR detected two of the pesticides – diazinon and chlorpyrifos – consistently throughout a year of air monitoring which we did at three schools in the Fresno county community of Parlier.

A core component of the stone fruit project is UC's new *Seasonal Guide to Environmentally Responsible Pest Management Practices in Peaches and Nectarines*, a handbook on proven alternative practices, focusing on:

- Treating for pests based on monitoring the extent of problems.
- Tolerating pests below economic thresholds.
- Using cultural or biological controls whenever possible to prevent increases in pest populations.
- Using effective, less-toxic pesticides whenever possible.
- Avoiding broad-spectrum pesticides.

The stone fruit project is also testing technology to reduce pesticide use. In 2006, DPR bought a target-sensing "smart sprayer" for UC Kearney that Parlier-area farmers can use without cost. Researchers documented that using the sprayer – which shuts off application between plants – can decrease pesticide use from 15 to 45 percent. DPR will continue this program for another three years.





In cooperation with U.S. EPA, DPR is funding a remote sensing project to test how well new aerial photography detects the early stages of a pest infestation. This is when an IPM approach is most effective, using an environmentally friendly pest management strategy to keep pest populations below a level that causes economic damage.

"Multispectral imaging" uses a special camera to cut one photograph into 4 broad color bands representing different parts of the electromagnetic spectrum. The photos measure the electronic magnetic energy reflected from the crop. Plant health is a major factor that dictates the amount of energy reflected. Multispectral images from the air can detect crop stress – such as pest infestations – and diagnose its cause.

This project is in its early stages. We are testing the technology in peach orchards in Fresno County. After the images are taken, pest specialists go into the fields to verify that the images are correct. Once perfected, the technology can provide farmers with details on crop condition that can be programmed into variable-rate equipment. For example, a tractor equipped with a special computer and locator equipment can be driven through a field and it will automatically apply pesticides only where needed, based on conditions seen in the imagery.

Another Kearney Ag Center project funded by DPR focuses on a new grape pest, the vine mealybug. Organophosphates used to combat this pest can contaminate waterways, get into surrounding air, and cause worker illnesses. The two-year project will test less-toxic pesticides as well as using imported natural enemies and mating disruption.

PROTECTING ENDANGERED SPECIES

Endangered species must be protected from harm that can be caused by pesticides. This is not only the law, but also makes good sense. DPR helps farmers and other pesticide users do this by recommending ways that needed pest control can be done and endangered species protected at the same time.

An important part of DPR's endangered species protection project is how we use computer-based geographic information systems, or GIS for short. GIS helps us pinpoint habitats of endangered and threatened species. DPR works closely with growers, pesticide applicators, County Agricultural Commissioners, wildlife experts, and other local groups to develop workable pest control methods to protect endangered species.

DPR has developed maps where these species make their homes near agriculture. Our online tool called PRESCRIBE allows pesticide users to find out quickly if there are endangered species in their areas of operation. The database provides use restrictions or alternative methods of application, depending on the pesticide. In 2006, DPR designed, printed and distributed more than 40,000 bookmarks in English and Spanish on how to use PRESCRIBE.

DPR also publishes field identification cards and other educational materials to help pesticide users identify endangered species and their habitats. DPR recently translated the field identification cards and instructional materials into Spanish. We distribute training materials at continuing education seminars and they are also available on our Web site, www.cdpr.ca.gov, click "Endangered Species."

DPR is funding research into a special kind of aerial photography to detect pest problems. The multispectral photo, far left, shows an orchard relatively free of red areas that designate mite infestation. The next photo, a month later, shows expanding mite populations. A researcher later checks photo accuracy by examining infested trees.